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ABSTRACT

This paper describes a computerized listening comprehension text created using an authoring system and designed for intermediate students of Chinese as a second language. The 12 lessons, enhanced with sound, animated visuals, and feedback, guide students in using appropriate top-down and bottom-up processing strategies to improve listening comprehension. Four listening skills are targeted: skimming; scanning; word inference; and distinguishing sounds. Lessons begin with pre-listening or advance organizer activities, then proceed to skimming, scanning, and word inference. A study using the materials had as subjects 11 American university students of Chinese. The students made steady progress through the semester, as indicated by gains in quiz scores. The students appeared to use many visual cues and word knowledge in their listening comprehension, performing most tasks correctly when visual cues were present. However, item analysis suggests the students need to practice listening for main ideas and facts. Participants felt the interactive multimedia materials helped them, and appreciated certain features such as repetition of segments. By the end of the program, they tend to value top-down strategies and listen to meanings. A materials evaluation form and listening strategy survey are appended. (MSE)

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Multimedia Contextual Cues and Listening Comprehension

The interactive multimedia listening comprehension program

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TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

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The interactive multimedia listening comprehension program

Introduction

A computer authoring system is used to write a listening comprehension text book (computer software) for students of Chinese at the intermediate level. The program provides multimedia of sound, animated visual, and feed back. The lessons in the program guide students to use appropriate top-down and bottom-up processing strategies, and to take the advantage of pedagogical support features designed specifically to the students. In this program, students are always provided a rich environment where they can have both the big context of a whole lesson and the relatively small context of a particular sentence or paragraph.

The computer program used is Libra authoring system. Libra authoring system allows to link computer, laser disc and audio-visual together to improve students listening comprehension proficiency. It provides a rich multimedia environment to foreign language teachers and enables them to creatively produce listening comprehension lessons. The system provides the features for teachers to specify the ways in which students interact with visual and computer programs, preview the lesson, brainstorm the possible information relevant to the text, activate the knowledge that a student already has on the topic of the text, listen to and watch the text in detail, answer comprehension

questions, and receive immediate feedback. The audio-visual presentation provides the context and direct cues which make the listening task much more interesting and less difficult; the computer programmed lessons make learning individualized and learner-centered.

The purpose of the program

The purpose of the program is to enable students take the advantage of pedagogical support features designed specifically to enhance their listening comprehension proficiency. Research studies have documented the advantages of explicit comprehension strategy instruction. Hosenfeld (1984) taught word-guessing techniques to individual students and found that their problem-solving behavior upon encountering an unknown word improved. Hamp-lyons (1985) compared the traditional and "text-strategy" approaches on improving learner's listening comprehension skills, and found positive results for the latter. Carrell (1989) reported that when students are aware of various comprehension strategies, they comprehend materials better. The literature on listening comprehension suggests that strategy-focused and well-designed lessons will train students listening comprehension skills and fundamentally help them improve their listening comprehension proficiency.

The goal of *the interactive multimedia listening comprehension program* is to train students' listening comprehension strategies. It has four purposes in this regard. It focuses on students listening skills of 1) skim, 2) scan, 3) word inference, and 4) distinguish distinctive sounds.

Listening comprehension strategies can generally be classified into two categories, top-down strategies and bottom up strategies. Top-down strategies refer to high order thinking skills, e.g. critical reasoning and inferencing skills. They include the more global strategies such as looking for text-gist and text organization, and developing students' understanding of the overall meaning of a text. Students need to use contextual cues to make hypotheses and to develop logical relationships among sentences in a discourse. By using top-down strategies, students can form coherent framework for their overall understanding of the meaning. Otherwise they may understand bits and pieces but unable to fit those pieces together to form a coherent view of the meaning.

Bottom-up strategies are on the word level. they are "local" and decoding types of strategies such as word recognition, syntactic parsing skills to develop a meaningful and accurate understanding of a text.

It is important to note that while native speakers of a language routinely employ an appropriate mixture of top-down and bottom-up strategies, they do not automatically transfer these strategies to their foreign language comprehension. Especially at the beginning stage of

foreign language acquisition, learners do not use many comprehension strategies which are fluently used in their first language comprehension. Research has showed that the foreign language learners at the lower level tend to adopt one set of strategies over the other. They may adhere to predominantly bottom-up strategies and remain fixed at the level of decoding separate words and phrases. It is important to train students to use both groups of strategies.

Major Features of this program.

The lessons created in *the interactive multimedia listening comprehension program* guide students to use appropriate top-down and bottom-up processing strategies to improve their listening comprehension. Students are always provided a rich environment where they can have both the big context of a whole lesson and the relatively small context of a particular sentence or paragraph. The major features of the program include four phases: pre-listening and advance-organizer; skim; scan; and word inference.

Pre-listening / Advance-organizer: The prior knowledge and general knowledge of the listening material are important. The program uses pretask advance organizers to provide selected vocabulary items, and to brainstorm about the text. Students are encouraged to generate hypotheses and create pre-listening expectations.

Skim for overall ideas: Students start to watch the laser-disc after they do pre-listening and read the general questions presented in the advance-organizer card. The general questions cover the overall meaning of the lesson and are usually limited within 4 items. Because the questions are e few, students can remember them while watching the disc.

Scan for particular information: After students understand the general ideas of the lesson, they look for particular information. Different kinds of comprehension questions in the lesson serve this purpose. Students are required to search for key words and meanings. The relevant disc segment for the particular question is provided on each card. Students can repeatedly watch the segment as many times as they like.

Word inference: Students are encouraged to guess the meaning of the word through the context. Students are given cues which may help them infer the meaning of the word. Students are also provided the opportunity to discriminate distinctive sounds and are trained to be a accurate listener to listen in the context for meaning.

In addition, both bottom-up and top-down strategies are integrated into the program to help student develop their listening comprehension proficiency. They include recognizing stressed patterns, listening for facts, guessing the meaning of the word from the context,

Listening to chunks of expressions. Many comprehension questions are designed to train these skills.

The major technique features include immediate feedback, interface dictionary, and the disc lesson which are available on any card.

The results of the present study

The interactive multimedia listening comprehension program has 12 lessons and each lesson has minimum 6 or maximum 9 cards.. The students on the intermediate level at the University of Houston (Chinese 2502, Spring semester, 1996) used the program as a part of the course requirement. Eleven students participated in this study. The questionnaires of "listening strategies survey" and "evaluation of the interact multimedia listening comprehension lessons" (please see the appendix) were administered by the end of spring semester, 1996. Three quizzes were given to the students. The score for each student at each quiz was collected and presented in Table 1. Four findings are derived.

First, students all did very well with their quizzes. All the students made steady progress through the semester which is indicated in their scores of the quizzes . The average score for the first quiz is 81.85, the second is 91.74, and the final quiz is 96. The comparatively high achievement scores of the quizzes may come from the advantage of the interactive multimedia program which provides students with

lots of easiness to use strategies and technical features such as contextual cues, relevant feedback, opportunities to repeat certain episodes or particular words and phrases. Because students were not asked to use the traditional method to watch the program, comparison can not be made between the present study with the method of tradition program (e.g. watch the episode of the video in a linear manner and answer questions).

Second, students seem to use lots of visual cues and world knowledge in their listening comprehension. They did most items correctly when the visual contextual cues were provided. The mistakes they made also show that visual presentation really plays an important role. For example, In Lesson 6, question 5, students used the visual context to select the second choice, that is "the material is rather rough and in poor quality." Actually the first choice (there is a patch at his elbow, and the material is not good) is more relevant. Another example is item 5 in Lesson 10. Item analysis (Table 2) also suggests that students need to practice more on listening for main ideas and facts. The high frequent mistakes that students made in items 1, 3, 4 in lesson 3 are such examples.

Third, the data from the "evaluation of the interact multimedia listening comprehension lessons" are presented in Table 3. The results suggest that students strongly agree that using the interactive multimedia lessons help them *improve their ability to understand*

speakers' use of vocabulary items in spoken Chinese, and *listen to key sentences.* They also deeply appreciate the function of the program that allows the *repetition of the specific segment.*

Fourth, Table 4 shows the strategies that students use most frequently with this program. These strategies include *watch the whole lesson first to get the general idea,* and *listen and try to figure out the meaning as going along.* It seems that students tend to value top-down strategies and listen to meanings by the end of the program.

Table 1
Scores of Three Tests

N	Test 1	Test 2	Test 3	Total
1	95	96	91	94
2	70	100	100	90
3	79	76	91	82
4	65	78.6	96	71
5	84	98	95.6	93
6	88.6	94.6	93	92
7	90	92	97.8	93
8	75	91	100	89
9	93	98	95.5	95.8
10	65.5	89	100	85.6
11	95	96	100	97
Total	81.85	91.74	96	89.3

Table 2 Item analysis

The items which has the highest error frequency

Items	L3: 1	3	4	6	L4: 1	2	L6: 3
Frequency	4	4	5	6	4	4	2
Items	L8: 1	3	5	7			
Frequency	3	5	3	2			
Items	L10: 1	2	3	4	5		
Frequency	2	2	2	4	8		

Table 3
Evaluation of the program

No. Items	Score (Possible highest score 30 for one item.)	
1. Enjoy using the program (Items 1, 15)	50	83.3%
2. Help with listening comprehension (Item 2)	24	80%
3. Help with grammar (Item 3)	25	83.3%
4. Help with vocabulary (Item 4)	26	86.6%
5. The visual presentation helps comprehension (Item 5)	24	80%
6. Comprehension questions are helpful (Item 6)	25	83.3%
7. Replay the specific segment is helpful (Item 7)	26	86.6%
8. Dictionary is available (Item 8)	25	83.3%
9. Technical cues (e.g. Key Icon) (item 10, 12)	50	83.3%
10. Advanced organizer is helpful (Item 13)	24	80%

Results of Listening Strategy Survey

No. Items	Score	
1. looking for the general meaning and main ideas (Items 1, 3, 4, 6)	199/240	82.9%
2. Guessing for the meaning of new words (Items 2, 8, 9, 10)	177/240	73.7%
3. looking for contextual cues (items 5 and 7)	93/120	77.5%

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Appendix

EVALUATION OF THE INTERACTIVE MULTIMEDIA LISTENING COMPREHENSION LESSONS

Please respond to the following items by circling the one which best represents your opinion.

1. I have enjoyed using the interactive multimedia lessons.
   strongly agree agree neutral disagree strongly disagree

2. Using the interactive multimedia lessons have helped me to improve my ability to understand spoken Chinese.
   strongly agree agree neutral disagree strongly disagree

3. Using the interactive multimedia lessons have helped me to improve my ability to understand speakers' use of grammatical structures in spoken Chinese.
   strongly agree agree neutral disagree strongly disagree

4. Using the interactive multimedia lessons have helped me to improve my ability to understand speakers' use of vocabulary items in spoken Chinese.
   strongly agree agree neutral disagree strongly disagree

5. Watching people interact while listening to what they say has helped me to improve my ability to understand spoken Chinese.
   strongly agree agree neutral disagree strongly disagree

6. answering listening comprehension questions has been helpful.
   strongly agree agree neutral disagree strongly disagree

7. Replaying specific segment as often as necessary has been helpful.
   strongly agree agree neutral disagree strongly disagree

8. Using the dictionary has been helpful.
   strongly agree agree neutral disagree strongly disagree

9. It is helpful when the questions and answers are presented in Chinese characters rather than in English. .
   strongly agree agree neutral disagree strongly disagree

10. It is helpful to listen to the key sentence(s) presented by Key icon.
   strongly agree agree neutral disagree strongly disagree

11. It is helpful to have answering checklist questions, questions with more than one correct answer.
   strongly agree agree neutral disagree strongly disagree

12. It is helpful to have icon-moving questions on the video story.
   strongly agree agree neutral disagree strongly disagree

13. The advanced organizer at the beginning of each lesson help me get ready to the watch the lesson and answer the questions of the lesson.
   strongly agree agree neutral disagree strongly disagree

14. The dictionary with Chinese characters are very helpful.
   strongly agree agree neutral disagree strongly disagree

15. The interactive multimedia lessons help me with my motivation of learning Chinese.
strongly agree agree neutral disagree strongly disagree

Listening Strategies Survey.

Please choose the number that best describes your listening when you do you interactive multimedia lessons.
1 = strongly agree 2 = agree 3 = neutral 4 = disagree 5 = strongly disagree

1. I start listening and try to figure out the meaning as I go along.
1 2 3 4 5

2. I like to know the meaning of every word of the sentence before I continue to the next sentence.
1 2 3 4 5

3. I like to know something about the topic in advance.
1 2 3 4 5

4. I go through the advanced organizer first to preview the lesson.
1 2 3 4 5

5. While I deal with each question of the lesson, I try to link the question with the whole lesson.
1 2 3 4 5

6. I always watch the whole lesson first to get the general idea.
1 2 3 4 5

7. I look for linguistic cues in the context of the preceding and following sentences.
1 2 3 4 5

8. I am not disturbed by the words and phrases that I do not know because I mainly look for key words.
1 2 3 4 5

9. I skip the words I don't know and continue to listen to the lesson.
1 2 3 4 5

10. I try to guess the meaning of unknown words.
1 2 3 4 5